Agriculture and Agrifoods - PlotCam Lite

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Contents

1 Introduction

Monitoring growth is an essential facet of managing crops. It allows farmers to make changes to the crops when needed and harvest the crops at the correct time to ensure optimal yield. The Plot Cam Lite (PCL) is an affordable solution to human-operated plant monitoring experiments. The design of this device is based on the original Plot Cam developed by Marc Lefebvre. The PCL uses a depth camera and a high resolution accelerometer to take Red Green Blue (RGB) and depth images of plants plots.

1.1 Key Features:

- User friendly

- Developed using PyQt5 and pyrealsense libraries

- Compatible with Intel Realsense D415 and PhidgetSpatial Precision 3/3/3 Accelerometer

- Easy camera configuration of FPS and resolution

2 In the Box

The items included in the PCL are listed below:

- Intel Realsense D415

- PhidgetSpatial Precision 3/3/3 High Resolution

- VR Head Set

- 1x USB C Cable

- 2x USB B Cables

3 Technical Specifications

Part	Component	Rating
Depth Camera	Model	Intel RealSense D415
	Ideal Range	0.5m to 3m
	Use Environment	Indoor/Outdoor
	Image Sensor Technology	Rolling Shutter
	Depth Technology	Active IR Stereo
	Depth Accuracy	2% at 2m
	Depth Frame Rate	30, 60, 90 FPS
	Depth Output Resolution	640x480, 1280×720
	RGB Sensor Technology	Rolling Shutter
	RGB Frame Resolution	1920×1080
	RGB Frame Rate	15, 30 FPS
	Connector	USB-C 3.1
	Dimensions	99 mm × 20 mm × 23 mm
Accelerometer	Model	PhidgetSpatial Precision 3/3/3 High Resolution
	Acceleration Measurement Max	± 2g
	Acceleration Measurement Resolution	76.3 µg
	Acceleration Bandwidth	497 Hz
	Accelerometer White Noise	280 µg
	Accelerometer Minimum Drift	40.6 µg
	Accelerometer Optimal Averaging Period	398s
VR Headset		

Table 1: Technical Specifications of the Hardware Components of the PCL

4   Requirements

The minimum requirements for running the software required to operate the GPS Log Book are listed below:

- Microsoft Windows 10 or above

- Python 3.9 or above

- 2x USB A 3.0 ports

- 1x USB C 3.0 port

5   Using Plot Cam Lite

- Connect the VR Headset through HDMI to your PC. - Connect the accelerometer through usb to pc - Connect an air mouse through usb to the pc - Connect the intel camera through usb c to the pc - Connect the

6 Getting Started

6.1 Hardware

6.2 Software

download package open document configure - fps, -res

7 Monitor Plant Data

8 Appendix

Acronyms

IR Infrared. 4

PCL Plot Cam Lite. 3, 4

RGB Red Green Blue. 3